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Case Report

Complete involution of prenatally-diagnosed fetal scalp hemangioma

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ABSTRACT

Objective: Scalp hemangioma is a rare benign fetal tumor. Here, we describe the detailed imaging features and natural course of a fetal scalp hemangioma until 1 year of age.
Case report: We encountered a case of scalp hemangioma at 23 weeks' gestation by prenatal ultrasonography and magnetic resonance imaging. The mass persisted postnatally, but spontaneously regressed after birth.
Conclusion: Proper diagnosis with prenatal ultrasonography and magnetic resonance imaging is important when a scalp mass is suspected *in utero*. Continuation of the pregnancy after appropriate counseling is prudent, considering the favorable prognosis and the rate of spontaneous regression of uncomplicated cases.

Introduction

Congenital hemangiomas are rare and were recently classified as neoplasms distinct from the more common capillary hemangiomas of infancy, in that they are mature at birth. Congenital hemangiomas are a vascular tumor subtype; the concept of which was introduced by Boon et al in 1996 [1]. The most common locations of the lesion are the limbs, head, and neck [2]. The incidence is higher in premature births (20%), female infants, Caucasians, advanced maternal age, multiple gestations, and with a history of chorionic villus sampling [3,4].

Congenital hemangiomas are subdivided into rapidly involuting congenital hemangioma (RICH) and noninvoluting congenital hemangioma (NICH). RICH is more frequent, and usually spontaneously involuted during the first 2 years of life. Conversely, NICH does not show any postnatal regression and therefore might result in cardiac failure, and requires surgical intervention more frequently [5]. RICH and NICH have many overlapping clinical features, such as appearance, location, size, and sex distribution.

Among the congenital hemangiomas, scalp hemangiomas are rarely reported. Here, we report a case of RICH that developed on a fetal scalp diagnosed in the second trimester that involuted completely 1 year after birth.

Case Presentation

A 29-year-old primigravida woman was referred to our tertiary prenatal center at 23 weeks' gestation with a suspected fetal scalp mass. The patient had an unremarkable prenatal course until the scalp mass was noted at a second trimester screening ultrasound (US) examination performed at a local clinic. The US at our center, performed with a Voluson 730 Expert system (GE Medical Systems, Milwaukee, WI, USA), AB2-7 3D probe (MI 1.3, TIs 0.2) and RAB4-8L 2D probe (MI 1.2, TIs 0.1), revealed a single fetus in cephalic presentation. The placenta was located anteriorly, and the amniotic fluid volume was within the normal range. Fetal biometry was consistent with 23 weeks' gestation. Gray-scale US images showed a 3.0 cm × 3.0 cm echogenic round mass that was projecting from the front of the fetal scalp (Fig. 1A). Color/power Doppler images depicted vascular flow within the tumor but no microshunt (Fig. 1B and C). However, US did not clearly depict any skull defects or intracranial extension. To determine if there were associated calvarian or intracranial lesions, fetal magnetic resonance imaging (MRI) was performed with a GE Healthcare 1.5 Tesla MR imaging system (Milwaukee, WI, USA). Using a single-shot fast-spin echo technique, the T2-weighted MR images (TR 2080 ms/TE 88 ms) also showed a well-circumscribed hyperintense scalp mass with an internal signal void, suggesting intratumoral vessels or calcifications.

Conflicts of interest: The authors have no conflicts of interest to declare.

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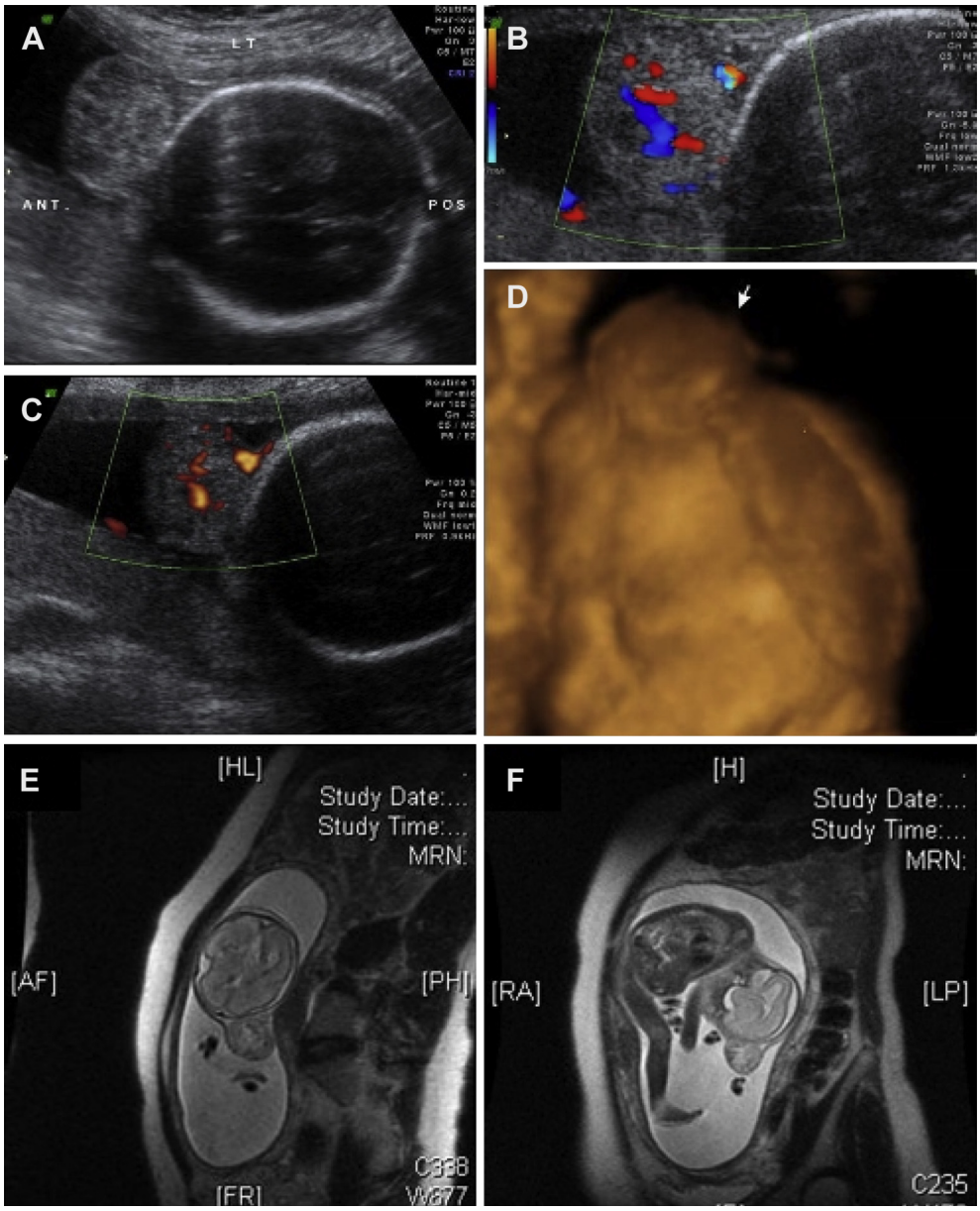

Fig. 1. US and MR images of the scalp mass at 23 weeks' gestation. (A) A transverse US image shows a 2.9 cm × 2.9 cm echogenic oval mass projecting from the frontal scalp. (B and C) Axial color/power Doppler images depicting blood flow in the tumor. (D) Three-dimensional multiplanar mode with surface-rendering shows the relative size and location of the scalp mass (arrow). (E and F) T2-weighted axial and sagittal MR images (TR 2080 ms/TE 88 ms) showing a hyperintense scalp mass that had suspicious signal void structures, suggesting vessels or calcifications. Note that the calvarium adjacent to the tumor is intact. MR = magnetic resonance; US = ultrasound.

No skull defects or abnormal intracranial lesions were noted (Fig. 1E and F). Fetal echocardiography was also performed and found to be normal. No associated anomalies were observed on level II US. Ultimately, the prenatal diagnosis of fetal scalp hemangioma was made.

After extensive counseling by multiple specialists, the couple was reassured with regard to continuing the pregnancy. Until 36 weeks' gestation, follow-up US scans at 4-week intervals showed no significant changes in the mass size, and no cardiac dysfunction was detected. At 38.3 weeks' gestation, an early delivery was scheduled due to suspected fetal growth restriction (estimated fetal weight: 2343 g, which was < 5th percentile at 38 weeks). Cesarean delivery was performed to avoid possible traumatic bleeding of the fetal scalp mass during vaginal delivery. A live baby girl weighing 2.41 kg was delivered with Apgar scores of 8 and 9 at 1 minute and 5 minutes, respectively. Neonatal physical examination showed that the head circumference was 32 cm. A 4-cm, bluish-purple, well-defined mass was present in the left parietal area; otherwise, the baby appeared normal (Fig. 2A and B). Acid–base assessment was performed on a doubly clamped cord from the umbilical artery and showed a pH of 7.289 and a base excess of −2.4. The infant's hemoglobin and platelet counts were 16.8 g/dL and 268 × 10^3 cells/μL, respectively.

Postnatal MRI (Philips Medical Systems, TR 2000 ms/TE 10 ms/TI 1000 ms, Best, Netherlands) of the scalp mass during the neonatal period showed a mass with a heterogeneous appearance measuring 4.0 cm × 3.5 cm × 2.5 cm. The mass had intratumoral vessels with a high signal intensity component on the fat-suppressed T1-weighted image. It also demonstrated low signal intensity on the T2-weighted image, consistent with a